

What Is Claimed Is:

1. In an insulating unit of the type having a pair of glass sheets separated by an edge assembly to provide a sealed compartment between the sheets having a gas therein, the improvement comprising:

the edge assembly includes a structurally sound spacer;

the edge assembly and glass sheets joined together to form a diffusion path having a high resistance to gas in the compartment, and

the edge assembly having a high edge assembly RES-value as determined using the ANSYS program.

2. The unit of claim 1 wherein the thickness of the diffusion path is less than 0.020 inch (0.0254 centimeter).

3. The unit of claim 2 wherein the length of the diffusion path is at least 0.125 inch (0.32 centimeter) long.

4. The unit of claim 1 wherein the edge assembly RES-value is at least 10.

5. The unit of claim 1 wherein the compartment has an insulating gas.

6. The unit of claim 1 wherein at least one glass sheet has an environmental coating.

7. The unit of claim 1 wherein the spacer has opposed surfaces and the edge assembly further includes a layer of sealant on the opposed surfaces of the spacer.

8. The unit of claim 7 wherein the spacer has a generally U-shaped cross-sectional configuration and the edge assembly further includes a moisture impervious sealant on the surface of the middle leg facing away from the compartment.

9. The unit of claim 7 wherein the spacer has a generally U-shaped cross-sectional configuration and the edge assembly further includes a layer of a moisture pervious material having a desiccant therein on at least a portion of the inner facing surface of said spacer.

10. The unit of claim 1 wherein the spacer is made of metal.

11. The unit of claim 1 wherein the spacer has a fiber reinforced fiber glass plastic core coated with a film of a gas and moisture impervious film.

12. The unit of claim 1 wherein the spacer has a plastic core coated with a film of a gas and moisture impervious film.

13. The unit of claim 12 wherein the film is a halogenated polymeric material.

14. The unit of claim 12 wherein the film is a thin metallic film.

15. The unit of claim 1 wherein the unit further includes three or more glass sheets, each of the sheets separated by an edge assembly with the edge assemblies and pair of adjacent sheets joined together to form a long thin diffusion path and each edge assembly having a high edge assembly RES-value as determined using the ANSYS program.

16. In a method of making an insulating unit, the method including the steps providing an edge assembly between a pair of glass sheets to provide a compartment therebetween, wherein the improvement comprises the steps of:

providing a pair of glass sheets;
selecting a structurally resilient spacer, sealant materials and moisture pervious desiccant containing material to provide an edge assembly having a high edge assembly RES-value as determined using the ANSYS program and a long forming path, and

assembling the sheets, spacer, sealant material and desiccant containing material to provide an insulating unit having an edge assembly having a high edge assembly RES-value as determined using the ANSYS program and a long diffusion path.

17. The method as set forth in claim 16 wherein said assembling step includes the step of providing a spacer having a height as viewed in cross section of about at least 0.010 inch (0.0254 centimeter) to provide a long diffusion path and the step of providing sealant material between the spacer and adjacent glass sheet, the sealant material having a thickness of about 0.010 inch (0.0254 centimeter).

18. The method as set forth in claim 16 wherein said assembling step includes the step of shaping a metal strip into a spacer having a generally U-shaped cross section.

19. The method as set forth in claim 18 wherein said shaping step includes:

providing the metal strip;
passing the metal strip through a plurality of forming rolls,
gradually shaping the strip into the spacer having the generally U-shaped cross section as the strip passes between the forming rolls.

20. The method as set forth in claim 19 further including the step of shaping the bead during the practice of said gradually shaping step.

21. The method as set forth in claim 18 wherein said assembly step includes the step of cutting sections of a U-shaped spacer and joining the sections together to form a spacer frame.

22. The method as set forth in claim 21 further including the step of creasing the spacer at least one location designated to be a corner of the spacer frame.

23. The method as set forth in claim 16 wherein said selecting step includes the step of providing a steel metal spacer having a U-shaped cross section, a thin layer of sealant on the outer legs of the spacer and a moisture pervious adhesive containing a desiccant on the inner surface of the center leg of the spacer, said assembly step includes the steps of:

forming a spacer frame from the spacer;

applying the sealant on the outer surfaces of the spacer frame;

positioning the spacer frame between the glass sheets and spaced from the peripheral edges of the glass sheets to form a peripheral channel;

adhering the glass sheets to the sealant, and

providing an adhesive in the peripheral channel.

24. A spacer for an insulating unit comprising a structurally sound and moisture and gas impervious body.

25. The spacer of claim 24 wherein the polymeric material of said body is a halogenated polymeric material.

26. The spacer of claim 25 wherein the halogenated polymeric material is polyvinylidene chloride.

27. The spacer of claim 25 wherein the halogenated polymeric material is polyvinylidene flouride.

28. The spacer of claim 25 wherein the halogenated polymeric material is polyvinyl chloride.

29. The spacer of claim 25 wherein the halogenated polymeric material is polytrichlorofluoro ethylene.

30. The spacer of claim 24 wherein the body includes a core that is structurally sound and moisture and gas impervious film on said core.

31. The spacer of claim 30 wherein the film is metal.

32. The spacer of claim 30 wherein the core is made from a polymeric material.